position of the source of optical signals is determined by measuring the signal amplitudes at each detector.

24. A device for processing optical signals, comprising:
an excitation unit for emitting light;
a light-guiding object including:
an irradiation surface for laterally receiving optical signals at angles of between 0 and 90 degrees relative to the irradiation surface;
a propagation path located adjacent to the irradiation surface;
a material having an electron arrangement in which a population inversion may be caused by an energetic excitation and in which an emission of light, at a wavelength corresponding to the wavelength of the received optical signals, may be induced along the propagation path and where the received optical signals are diffused such that they have a component along the light propagation path;
a detector optically coupled to said light-guiding object for detecting light having a wavelength corresponding to the wavelength of the received optical signals; and
a wavelength-selective element for filtering out light not corresponding to the wavelength of the received optical signals to be detected by said detector.

Remarks

By the foregoing Amendment, claims 9-17 are cancelled and new claims 18-24 are presented. Entry of the Amendment, and favorable consideration thereof is earnestly requested. Applicant respectfully submits that no new matter has been added by this Amendment.

The Examiner has rejected claims 9-17 under 35 U.S.C. §112, second paragraph, as being indefinite. The Examiner has further rejected claims 9-17 under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in

the specification. Finally, the Examiner has rejected claims 9-17 under 35 U.S.C. §102(b) as anticipated by the Desurvire article or the Kanamori article. These rejections are respectfully traversed.

Applicant respectfully submits that claims 9-17 have been cancelled and new claims 18-24 have been presented which address the Examiner's 35 U.S.C. §112 rejections.

The present invention utilizes a light-guiding object that is capable of undergoing a population inversion. Once a population inversion is achieved in the light-guiding object, incident light (or optical signal) may be applied to the light-guiding object. When the incident light enters the light-guiding object in the presence of the excitation, the incident light cause a return of a large number of excited atoms to the original (lower) state, resulting in an induced emission of light having the same characteristics as the incident light. This will, in turn, stimulate further emission in the material and amplification of the incident light is achieved. Systems and methods as described above are known.

The present invention, however, provides an improved system and method for transferring or applying the incident light to the light-guiding object. The light-guiding object of the present invention comprises ~~a~~ base material, which has the property of diffusing or scattering the incident light (or optical signal). This scattering is achieved by the characteristics of the light-guiding object such that, depending upon the scattering properties desired, some components of the scattered incident light are directed along the propagation path of the light-guiding object and toward the detector, even when the incident light enters the irradiation surface at as high an angle as 90 degrees. This allows a higher proportion of the incident light to be deflected along the propagation path toward the detector. The term "elastic dispersion" was used to describe a diffusion or scattering of the incident light without a change in the wavelength of the incident light; however, it is a well-known principle that diffused or scattered light has the same

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Note Raman & Stokes shifts

wavelength as the incident light. Therefore, the term "elastic dispersion" is not being utilized in any of the present claims.

The Desurvire article discloses a system utilizing laser diodes to stimulate emission of radiation in erbium-doped fibers, which is not dependant upon the polarization of the signal applied (Desurvire pp. 117-118). However, the Desurvire article fails to disclose applying an optical signal laterally (between 0 to 90 degrees) to the optical fiber such that the optical signal is diffused and the diffused light has a component along the propagation direction of the light-guiding object, as required by all the claims of the present invention. The Desurvire article does disclose applying an optical signal to the light-guiding object, but nowhere does it disclose that a component of the diffused light is transmitted along the propagation direction. In fact, the Desurvire article is directed toward facilitating high volume transfer of data with minimal signal attenuation for the telecommunications industry. The present invention has applications in moving optical devices, which present different challenges to optical signal transmission, where the angle of the incident light to the light-guiding object may be as high as 90 degrees.

Therefore, because the Desurvire article fails to teach, disclose or suggest applying an optical signal laterally (between 0 to 90 degrees) to the optical fiber such that the optical signal is diffused and the diffused light has a component along the propagation direction of the light-guiding object, as required by all the claims of the present invention, it cannot anticipate or render the present invention obvious.

The Kanamori article also discloses a system utilizing stimulated emission of radiation in erbium-doped fibers to achieve high data rate transfers over long distances. However, the Kanamori article also fails to disclose applying an optical signal laterally (between 0 to 90 degrees) to the optical fiber such that the optical signal is diffused and the diffused light has a component along the propagation direction of the light-guiding object, as required by all the claims of the present invention. The Kanamori article does

discuss dispersion compensation; however, this relates to the well-known dispersion rate or rate of diffusion of the fiber itself as light propagates down the length of the light-guiding object. The lower the dispersion rate, the further the optical signal can propagate and still be intelligible. Nowhere, however, does the Kanamori article disclose that a component of incident and diffused light is transmitted along the propagation direction. In fact, figure 1 of the Kanamori article shows that both the "Signal In" and the "Pump LD Module" are fed into an input of the "WDM Coupler" prior to being applied to the "Er^3 - Doped Fiber" (Kanamori article, figure 1), whereas all the claims of the present invention require applying an optical signal laterally to the optical fiber.

Therefore, because the Kanamori article fails to teach, disclose or suggest applying an optical signal laterally (from 0 up to 90 degrees) to the optical fiber such that the optical signal is diffused and the diffused light has a component along the propagation direction of the light-guiding object, as required by all the claims of the present invention, it cannot anticipate or render the present invention obvious.

It is respectfully submitted that claims 18-24, all of the claims remaining in the application, are in order for allowance, and early notice to that effect is respectfully requested.

Respectfully submitted,

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